

Vita

Candidate's name: John William Robinson

Universities
Attended: Lakeland College (2017)
Diploma in Environmental Sciences

University of Prince Edward Island (2019)
Bachelor of Wildlife Conservation

University of New Brunswick (2024)
Masters of Science
Biology

Conference Presentations:

“River Restoration in Action: Recovering Endangered Atlantic Salmon and Aquatic Ecosystems One National Park at a Time” - Fisheries Society of the British Isles 2023 International Annual Symposium. Fish Habitat Ecology in a Changing Climate. University of Essex, UK.

“Does One Size Fit All?: Assessing Salmon Restoration Strategies Across Five National Parks” - Society of Canadian Aquatic Sciences 2023. Montreal, Quebec.

Assessing Atlantic Salmon (*Salmo salar*) Recovery Across Five Atlantic Canadian National Parks Through Juvenile Abundance Modelling

UNIVERSITY OF NEW BRUNSWICK
THESIS DEFENCE AND EXAMINATION

in Partial Fulfillment
of the Requirement for the Degree of
Master of Science

by

John W. Robinson

in the Department of Biology

U.N.B., Fredericton, N.B.

**Friday, December 6th, 2024
1:00 p.m.**

via MS TEAMS

Examining Committee

Dr. Kurt Samways
Dr. Jeff Houlahan
Dr. Heather Major
Dr. Shawn MacLellan

Supervisor
Internal Examiner
External Examiner
Chair of Oral Examination

Abstract

For decades, Atlantic salmon in Eastern North America have precipitously declined. In response, Fundy National Park, in conjunction with Fundy Salmon Recovery, implements a smolt-to-adult supplementation strategy at the world's first Wild Salmon Marine Conservation Farm. Cape Breton Highlands National Park uses a similar strategy but in a freshwater rearing environment, while Kouchibouguac National Park plants fertilized eggs, and Gros Morne and Terra Nova National Parks use community-based restoration approaches. To assess juvenile salmon population abundance through decline and recovery implementation of these Parks, a Bayesian hierarchical model was developed to: i) standardize single-pass and multi-pass electrofishing methodology, and ii) estimate an index of average annual juvenile density to assess population trends before and during recovery implementation, using an electrofishing dataset covering 536 sites, over 49 years, across five National Parks. Increasing population trends were observed in Fundy rivers and

stable to increasing trends in the Kouchibouguacis River of Kouchibouguac National Park, while Trout River of Gros Morne and the Kouchibouguac River exhibited continued declines. Monitoring protocol challenges affecting model estimates were present in Cape Breton Highlands and Terra Nova. Overall, single-pass electrofishing sites may lack the accuracy of multi-pass methods but are an efficient sampling approach from a full catchment perspective